DOCUMENT RESUME

ED 457 967 PS 029 792

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TITLE A Comparison of Self-Regulated Problem-Solving Awareness of American and Korean Children.
PUB DATE 1996-04-00
NOTE 42p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, April 8-12, 1996).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Age Differences; *Children; Comparative Analysis; Cross Cultural Studies; Cultural Differences; Foreign Countries; *Metacognition; *Problem Solving; *Social Cognition
IDENTIFIERS *Self Regulation; South Korea; United States

ABSTRACT

As part of a cross-cultural investigation of self-regulated learning, this study investigated American and South Korean children's knowledge of appropriate self-regulation in a variety of settings. Participating in the study were 120 South Korean and 95 American children, nearly equally divided between males and females in each of 3 grades--first, third, and fifth. Children were presented with 20 hypothetical situations highlighting self-regulation issues related to problem solving within and outside the classroom. Six personal self-regulation questions followed. Two raters separately coded children's responses into five categories: no strategy, direct effort, active practice, help from others, and other strategies. Results indicated that Korean children had higher self-regulation scores on non-school-based problems than American children, whereas American children had higher self-regulation scores on school-based problems than did Korean children. Third and fifth graders had higher self-regulation scores than first graders. Cultural differences were evident in the type of strategies selected for problem solving. Grade differences support a developmental trend in metacognition for older children to have more elaborate and advanced understanding of learning strategies. (Two appendices include the interview questions and description of log-linear analysis techniques. Contains 25 references.) (KB)

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A Comparison of Self-Regulated Problem-Solving Awareness of American and Korean Children

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A Paper Presented at the Meeting of the

American Educational Research Association

New York City, NY

April, 1996

PS 029792

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Self-Regulated Problem-Solving Awareness Among Korean Children

This study investigates American and Korean children's knowledge of appropriate self-regulation in a variety of settings. As part of a cross-cultural investigation of self-regulated learning, this study seeks, from the perspective of self-regulation research, to determine children's grade-level (first, third, and fifth) and country (South Korea and the USA) differences in perceptions of appropriate problem-solving behaviors and their own strategies for accomplishing various academic tasks.

The active and often complex nature of meaningful learning requires that learners employ a variety of self-regulation processes in order to achieve certain goals or to solve problems that involve multiple and often over-lapping sequences of strategies and steps (Corno, 1986; Iran-Nejad, 1990; Schunk, 1986; Zimmerman, 1986, 1990, 1994). While conceptions of self-regulation include motivational processes (Schunk, 1994; Zimmerman, 1990), conceptions of self (McCombs, 1986), sense of self-efficacy (Bandura & Cervone, 1983), social learning (Bandura, 1986; Meichenbaum, 1990), interest (Hidi, 1990), and self-evaluation (Spates & Kanfer, 1977), there are important cognitive elements in self-regulated learning as well (Bjorklund, 1989; Corno & Mandinach, 1983; Ghatala, 1986; Pressley, Borkowski, & Schneider, 1987).

Research on children's self-regulation depicts effective learners as those who employ a variety of metacognitive, motivational, and behavioral strategies during

learning (Pintrich & degroot, 1990; Pressley, Borkowski, & Schneider, 1987; Zimmerman, 1990). As active participants in all phases of learning, self-regulated learners engage in such activities as self-evaluation, goal-setting, planning, seeking information, self-monitoring, environmental restructuring, rehearsing and memorizing, seeking peer assistance, and seeking teacher or adult assistance (Zimmerman & Martinez-Pons, 1986). These activities may be available to learners at different times of their lives and under differing learning conditions. For example, goal-setting becomes appropriate for tasks that involve relatively undefined goals at their onset or for which there are different, competing goals. Information seeking, also, may be necessary for certain kinds of problems that do not contain readily apprehended information, but may be unnecessary for situations where the tasks are simple, straightforward, and contain all the relevant information.

Children's increasingly sophisticated use of learning strategies (Garner, 1990; Pressley, Snyder, & Cariglia-Bull, 1987) and their development of metacognition (Kreutzer, Leonard, & Flavell, 1975; Schneider & Pressley, 1989) suggests that they should also increase in their recognition of and employment of self-regulation of learning as they become older. This should be particularly true in cultures that encourage autonomous problem solving and independent effort in learning both in the home and in school. Additionally, ~~in~~ cultures that emphasize schooling at early and later ages should instill in children proclivities toward persistence and sustained effort during learning and problem solving. Because of the high premium placed upon education in South Korea, it is of interest to learn

the degree to which Korean children recognize the value of certain problem-solving behaviors in their daily experiences. This comparison of children from the USA and from such a strongly education-oriented society as South Korea can add to our understanding about cultural differences and similarities in the development of self-regulated learning.

Method

Instrument

The Self-Regulation Interview contains two sections: Self-Regulated Problem-Solving Situations and Personal Self-Regulation. The first section, Self-Regulated Problem-Solving Situations, presents specific questions related to the child's understanding of effective and ineffective methods of solving problems, based upon prior studies of self-regulated learning in children and based on a format for metamemory research developed by Kreutzer, Leonard, and Flavell (1975) and modified and extended cross-culturally by Gorrell (Gorrell, et al., 1992). Each item in the interview presents hypothetical situations and asks the child to indicate one of two possible courses of action and his or her reasons for choosing it. There are ten basic issues depicted in the interview: Self-evaluation, goal-setting, planning, seeking information, self-monitoring, environmental restructuring, rehearsing and memorizing, seeking peer assistance, and seeking teacher or adult assistance. Examples of situations that might call for appropriate problem-solving are structured for both school and non-school settings, resulting in 20 separate situations probed by the interview. Prior research (Gorrell, et al., 1992) in Sri Lanka

has shown that children do respond differentially to metacognitive choices presented as school-based or non-school-based situations. Choices that are consistent with self-regulated behavior are scored as a one; Choices that are not consistent with self-regulated behavior are scored zero. Scores on the instrument may range from zero to 20.

One of the interview questions (related to self-evaluation) is as follows: "Cindy and Beth have been working together, making their new Halloween costumes for a party tonight. Beth feels that she is satisfied with her costume and is ready to wear it now. Cindy feels that before wearing the costume she wants to look at the costume to make sure that it fits well. Which would be better to do? Why?" All of the self-regulation questions are listed in Appendix A.

The second portion of the interview (Personal Self-Regulation) concerns self-regulation attempts in the child's own academic life. Children respond to six questions (Appendix B) concerning whether they have their own strategies for handling certain academic problems: learning and remembering, planning and completing work, completing mathematics assignments, studying for tests, completing homework, and studying at home. These questions are open-ended and allow for children to name their own specific strategies in each situation.

Subjects

There were 215 American and South Korean children in the study: 120 from Korea and 95 from the USA, nearly equally divided between males and females in each of three grades, first, third, and fifth. Children were randomly selected from

schools in Seoul, South Korea, and Auburn, Alabama, representing a normal range of ability for their grades.

Procedure

Trained interviewers interviewed the children at their schools during normal school hours. In all cases, the Self-Regulated Problems-Solving Situations were presented before the Personal Self-Regulation questions.

Self-Regulated problem-solving situations. This portion of the study consisted of twenty hypothetical situations that highlighted certain self-regulation issues within the classroom and outside the classroom. We were careful throughout the interview to give no indication of what would be considered the appropriate or "right" answer. If a child had no answer to any item, we prompted him or her to by saying, "Can you think of anything at all?" If the child did not understand a question, it was repeated or paraphrased in simpler language, but still no examples or suggested answers were given. If it helped the child to understand certain questions, we reworded the situation described in the question from the 3rd person to the 2nd person. For example, we might say, "If you had to give instructions on kite making, which would it be easier for you to do?"

We used follow-up questions in the interview in order to encourage more responses from the child. Examples of the follow-up comments are as follows: (a)"Is there anything else you can think of?," (b)"Can you add any more?,"

(c)"What do you mean by .....?," and (d)"What else can you tell me?." All prompts or follow-up questions were open-ended. Interviewers did not suggest answers to the child nor indicate whether the child was wrong or right.

Personal self-regulation.

We asked children each of the six personal self-regulation questions following presentation of the self-regulated problem-solving situations, encouraging them to elaborate on their answers and to be as specific as possible. Following the interview, two trained raters separately coded the children's responses into five main categories (no strategy, direct effort, active practice, help from others, and other strategies), then compared their codings. Initially they agreed on the codes 96.8% of the time. They resolved differences in codings through discussion, resulting in one set of codes to be used for the data analysis.

Results

Self-Regulation Problem-Solving Situations

A 2 (non-school and school-based problems) x 2 (Korea and the USA) x 2 (male and female) x 3 (first, third, and fifth grades) mixed-design MANOVA performed on total responses in the interview resulted in statistically significant between-subjects multivariate effects for grade, $F = 8.62$, $p. < .001$, for country, $F = 5.01$, $p. < .05$, and for the country by grade interaction, $F = 9.96$, $p. < .001$. There were no other statistically significant differences ($p. > .05$).

The within-subjects portion of the multivariate analysis (school-based and non-school-based problems) resulted in a statistically significant main effect for type of problem, $F = 13.33$, $p. < .001$, and a statistically significant interaction between country and type of problem, $F = 51.02$, $p. < .001$. There was no statistically significant main effect for sex, nor any other statistically significant interactions ($p. > .05$).

A post-hoc comparison of means for children from both countries (Tukey $< .05$) shows that Korean children have higher self-regulation scores (8.18) on non-school-based problems than American children (6.97). For school-based problems, however, American children have higher self-regulation scores (8.33) than Korean children (7.73). Differences in scores on each section of the interview may be seen in Table 1.

Place Table 1 about here

Inspection of means related to the within-subjects comparison (Tukey $< .05$) reveals that in general, for both school-based and non-school-based problems, children in the third and fifth grades have higher self-regulation scores (16.14 and 15.40, respectively) than children in the first grade (14.84). For Korean children, scores on non-school-based (7.88, 8.38, 8.30, respectively) and school-based (8.10, 7.78, 7.33, respectively) problems are not statistically significant (Tukey

>.05) differences. For American children, children in the third and fifth grades have significantly higher scores (7.24 and 7.53) on the non-school problems than children in the first grade (6.03); likewise, the third and fifth grades have higher scores on the school-based problems (8.72 and 8.88) than the first graders (7.24). Tables 2 and 3 give the obtained scores for each item of each section (school or home and community) of the interview.

Place Tables 2 and 3 about here

Personal Self-Regulation

In order to ascertain the specific differences in frequencies of children's coded responses, we used constructed chi-square-type contingency tables and performed log linear analysis on each question in the interview. You can find a brief explanation of this statistical approach in Appendix C.

For question 1 (Do you have ways to help you learn and remember?), asymmetrical log linear analysis, based upon frequency counts in contingency tables, indicates statistically significant differences associated with grade level and types of responses. Estimated lambdas show that direct effort in learning (.849, p. <.05) is significantly more frequently mentioned by first grade children from both countries than by third and fifth grade children in both countries; frequencies for first, third and fifth grades are 33, 10, and 9, respectively. Also, active

participation (-.520, $p < .05$) is mentioned less frequently by first grade children than by third and fifth grade children; frequencies for first, third and fifth grades are 20, 49, and 50, respectively. Table 4 shows the frequencies of the five types of responses by grade and country.

Place Table 4 about here

For question 2 (How do you plan and complete?) asymmetrical log linear analysis, derived from contingency tables, also indicates statistically significant differences associated with grade level and types of responses. Estimated lambdas show that having no strategy (.746, $p. < .05$) is significantly more frequently mentioned by first grade children from both countries than by third and fifth grade children in both countries and least frequently mentioned by fifth graders; frequencies for first, third and fifth grades are 32, 14, and 9, respectively. Interpretation of the two statistically significant lambdas indicates that first graders are different from both third and fifth and that fifth graders are different from first and third, indicating a trend for response to decrease across changes in grades. For direct effort, estimated lambdas indicate that fifth graders (-.573, $p < .05$) statistically significantly less frequently mention the use of direct effort than first and third graders; frequencies for first, third, and fifth graders are 18, 23, and 10, respectively. Finally, active participation (-.690, $p < .05$) is mentioned less

frequently by first grade children than by third and fifth grade children and more frequently by fifth graders (.536, $p < .05$) than third and fifth; frequencies for first, third and fifth grades are 8, 23, and 32, respectively. Interpretation of the two statistically significant lambdas indicates that first graders are different from both third and fifth and that fifth graders are different from first and third, indicating a trend for responses to increase across changes in grades. Table 5 shows the frequencies of the five types of responses by grade and country.

Place Table 5 about here

For question 3 (Do you have a special way to help you complete math assignments?), asymmetrical log linear analysis indicates statistically significant differences associated with grade level and types of responses. Estimated lambdas indicate that first graders (-1.049, $p < .05$) statistically significantly less frequently mention the use of active participation than third and fifth graders; frequencies for first, third, and fifth graders are 9, 35, and 39, respectively. The estimated lambdas also show that third (.373, $p < .05$) and fifth graders (.676, $p < .05$) statistically significantly more frequently mention active participation than they mention other strategies. Additionally, first graders are statistically significantly more likely to mention the use of help from others (.479, $p < .05$) than third and

fifth graders; frequencies for first, third, and fifth graders are 19, 7, and 9, respectively. Table 6 shows the frequencies of the five types of responses by grade and country.

Place Table 6 about here

For question 4 (Do you have a special way to prepare for a test?), asymmetrical log linear analysis indicates statistically significant differences associated with grade level and types of responses. Estimated lambdas show that direct effort in learning (.870, $p. < .05$) is significantly more frequently mentioned by first grade children from both countries than by third and fifth grade children in both countries; frequencies for first, third and fifth grades are 12, 6, and 0, respectively. Also, estimated lambdas indicate that first graders (-.595, $p < .05$) statistically significantly less frequently mention the use of active participation than third and fifth graders; frequencies for first, third, and fifth graders are 30, 54, and 55, respectively. Table 7 shows the frequencies of the five types of responses by grade and country.

Place Table 7 about here

For question 5 (Do you have special ways to get yourself to complete homework?), asymmetrical log linear analysis indicates statistically significant differences associated with country and types of responses. Estimated lambdas show that direct effort (thinking, remembering, getting to work) in learning (.655, $p. < .05$) is significantly more frequently mentioned by Korean children (27) than by American children (7). Also, estimated lambdas indicate that American children (.629, $p < .05$) statistically significantly more frequently (16) mention seeking help from others than Korean children (3). Table 8 shows the frequencies of the five types of responses by grade and country.

Place Table 8 about here

For question 6 (Do you have special ways to improve your study at home?), asymmetrical log linear analysis indicates statistically significant differences associated with country and types of responses. Estimated lambdas show that active participation in learning (.334, $p. < .05$) is significantly more frequently

mentioned by Korean children (63) than by American children (32). Also, estimated lambdas indicate that American children (.648, $p < .05$) statistically significantly more frequently (30) mention seeking help from others than Korean children (7). Table 9 shows the frequencies of the five types of responses by grade and country.

Place Table 9 about here

Discussion

Primary findings from this study are that both American and Korean children exhibit relatively high levels of self-regulation responses on the self-regulation interview across all age levels (means of about 16 with a maximum score of 20) and that for non-school settings, older children exhibit greater understanding of self-regulation in problem solving than younger children. There is some evidence of age-related trends on about half of the individual items, but there is not a completely consistent pattern across those items.

Finding at all ages relatively high levels of self-regulation understanding suggests that, at least for relatively constrained and simple daily issues associated with solving problems, American and Korean young children find it easy to recognize appropriate choices related to achieving their goals. The age trends for

non-school settings suggest an improvement in metacognitive knowledge about self-regulation, which is consistent with prior research on children's metacognition (Gorrell, et al., 1992; Kreutzer, Leonard, & Flavell, 1975). This finding may be understood in terms of the differential demands for goal-directed behavior associated with school and non-school situations, where non-school situations are more variable and do not contain as many expectations of living up to specific standards of performance. Thus, older children's greater awareness in non-school settings may be a stronger indicator of their more natural responses than those associated with schooling.

It is interesting to find Korean children exhibiting higher self-regulation for non-school problems while American children exhibit higher self-regulation for school-based problems. Such differences may be due to cultural differences found in the homes and in the schools. Korean parents tend to expect their children to achieve in a wide variety of activities even before going to school, which may lead to those children having more experiences in planning and organizing problem-solving activities out of school. American children, on the other hand, tend to experience more independent activity in the classroom than their Korean counterparts, thus gaining greater opportunities to engage in self-regulated problem solving in school. Some support for this interpretation may be seen in the trend for American children to increase their self-regulation in higher grades and for Korean children to lower their self-regulation. Overall, the differences found in trends for children in each country can be understood as differences that occur when children

are given opportunities to engage in meaningful problem-solving activity in or out of school settings.

The trend for Korean children in the first and third years of school to have higher self-regulation awareness is also intriguing. One possible interpretation of the results is that there may be certain types of activities in Korean schools and homes that actually are more adaptive and supportive at certain ages and in certain situations, while the same activities may be perceived as being unnecessary or less relevant to children at other ages. For example, the trend for Korean children to select rehearsing as a preferable strategy for following mathematical problem-solving steps (see item 8 for school setting situations, "rehearsing and memorizing,") decreases dramatically from the first (.950) and third grade (1.00) to the fifth grade (.700). In a school setting where memorization is highly valued from early years, children in the fifth grade may have progressed in their mathematics problem solving to a point where they need this supportive activity less than they might at earlier grades. American children, on the other hand, increase in their awareness of memorization as a strategy from first to the third and fifth grades, which may reflect some differences in how early schooling is structured in the USA.

For Korean children, the combination of situational expectations and of developmental increases in memory and problem solving could account for the reduction in school-based strategies. Such a difference in children's responding could actually be a sign of many older children's capabilities to select appropriate

strategies for regulating their learning as opposed to persisting with general strategies that are not as necessary as in the past. In other words, some of the differences found in this trend can be understood as differences that occur when children are given opportunities to engage in meaningful problem-solving activity in or out of school settings and when they adapt their strategies to fit the situations.

For American children, the trend is for them to increase their school-based and home and community self-regulation choices as they progress from the first to the third grade, levelling off with the fifth grade. Such an increase can be seen in light of increases in academic tasks that require greater self-regulation, because of more complex activities require more sustained effort and a variety of strategies.

For children in both countries, we see that organizing and transforming is represented much less frequently than other strategies. Also, the incidence of organizing and transforming rises from the first to the third and to the fifth grade. This strategy is among the most complex learning strategies and it is more likely to be necessary in higher grades when assignments are more complex.

The second part of the interview, personal self-regulation, yields some differences associated with grade in school and some differences associated with country. The grade differences found in questions associated with learning and remembering, planning and completing a project, completing math assignments, and preparing for a test, strongly support prior research findings (Gorrell, et al., 1992; Kreutzer, Leonard, & Flavell, 1975) of a developmental trend in metacognition for older children to have more elaborate and advanced

understandings of strategies for learning. We can see the rise of understandings that employing specific active strategies (use of workbooks, reviewing, rereading, developing plans, organizing material, and so forth) is an effective way to achieve in academic tasks. Similarly, there is a decline in statements regarding simple direct effort (think, memorize, study) that tends to parallel the rise in active participation strategies.

Some of the differences in these grades may simply be the differences in demands placed upon the students. For example, the use of workbooks is more common in later grades when children have begun to read and write more. However, since for three of the four questions there also is a decline in responses that indicate having no strategies (see Tables 4, 5, and 7), we cannot account for all of the changes only in terms of a shift to more sophisticated strategic behavior. Children in the first grade significantly more often indicate no strategy at all, while that response drops dramatically by the third and fifth grades. It appears that the ability to recognize the use of at least one strategy rises overall from the first to the fifth grade, suggesting that awareness of strategic behavior increases as well as awareness of more complex strategies that can be used to enhance learning and performance. This may be most clearly seen in Tables 4 and 7 (learning and remembering; studying for a test) where the number of active participation responses by third and fifth graders dwarf the number of responses in other categories.

A final note related to the grade-level differences is that seeking help from others shows a decline from the first to the third grade for the situation where children are completing math assignments (Table 6), and an increase from first grade to third and fifth grades for completing projects outside class (Table 5). These differences in help-seeking are most likely associated with the points where children are being introduced in a more systematic way to those activities. In other words, seeking help from others for completing math assignments would be more commonly found at the point where children are being expected to do math problems for the first time. Likewise, in the later grades in elementary school children are expected to do more out-of-class assignments, leading them to seek more help from parents, family, and friends. Our interpretation of these changes is consistent with orientations that indicate that cognitive and performance demands are significant influences on the development of cognitive and performance strategies.

The nature of demands and strategies may also be the most important reason for findings in the last two questions of this part of the interview. In these questions, children described ways they had of completing homework assignments when there are other, more interesting activities occurring and ways of studying at home for tests. In these out-of-school cases, there is a difference in responses by Korean and American children. More Korean children indicate that they apply direct effort (completing homework, studying at home, thinking; remembering) or active participation (studying at home) strategies that American children, who are more

likely to indicate that they would seek help from others in those cases more frequently than Korean children. The picture that emerges from these differences is one where Korean children are more focused upon individual accomplishment and task-oriented behavior than American children who appear to rely more heavily upon family support to do homework and study.

This general trend should be considered in light of school and familial expectations. In a culture that promotes hard work and application of effort as a key for success, we would expect to see more children indicating that they simply work hard at getting the assignments done. The demands for performance would support development of attitudes associated with sticking to the task until it is completed and towards devising effective strategies that help the child reach completion. However, since there also are American children who indicate similar approaches to the homework and home study situations, the differences that may exist between the two countries appears to be more a matter of degree and emphasis rather than absolute differences. A more in-depth and detailed look at the demands of homework and children's ways of handling those demands in both countries would enable us to see more detail about this apparent difference.

The combination of finding that Korean children have somewhat higher self-regulation scores for home and community situations and of finding the above-mentioned orientation toward more direct effort and active participation strategies when doing homework and studying at home strengthens the interpretation that home and family demands related to academic and personal accomplishment may

be higher in Korean households. This potential difference in settings also should be investigated more fully in order to determine if such demands actually are leading to Korean children's earlier and more fully developed awareness of ways of regulating their learning activities.

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Table 1

Means for Self-Regulated Problem-Solving Awareness By Country and Year in School

	Korea			USA		
Grade	Home and Community	School	n	Home and Community	School	n
1	7.88	8.10	40	6.03	7.24	29
3	8.38	7.78	40	7.24	8.88	34
5	8.30	7.33	40	7.53	8.72	32

Table 2

Means for Home and Community Interview Items by Country and Grade

Grade	1	2	3	4	5	6	7	8	9	10
Korea										
1	.900	.100	.775	.850	.925	.950	.975	.550	.925	.925
3	.950	.200	.975	.750	.950	.850	1.000	.750	1.000	.950
5	.925	.600	.975	.875	.775	.950	.975	.575	.775	.875
USA										
1	.931	.241	.276	.103	.828	.724	.759	.483	.793	.897
3	.912	.412	.647	.235	.941	.853	.912	.382	.941	1.000
5	.938	.500	.687	.406	1.000	.875	.813	.344	.969	1.000

Note. 1 = Self-evaluation
2 = Organizing and transforming
3 = Goal-setting
4 = Planning
5 = Seeking information
6 = Self-monitoring
7 = Environmental structuring
8 = Rehearsing and memorizing
9 = Seeking peer assistance
10 = Seeking teacher or adult guidance

Table 3

Means for School Interview Items by Country and Grade

Grade	1	2	3	4	5	6	7	8	9	10
Korea										
1	1.000	.375	1.000	1.000	1.000	.625	.725	.950	.625	.800
3	1.000	.275	.925	.850	.850	.775	.700	1.000	.500	.750
5	.925	.525	.825	.825	.875	.650	.750	.700	.575	.725
USA										
1	.862	.414	.621	.931	.828	.517	.828	.690	.759	.793
3	1.000	.647	1.000	1.000	.941	.765	.941	.824	.824	.941
5	.969	.594	.906	.937	1.094	.563	.906	.813	.937	1.000

Note. 1 = Self-evaluation
2 = Organizing and transforming
3 = Goal-setting
4 = Planning
5 = Seeking information
6 = Self-monitoring
7 = Environmental structuring
8 = Rehearsing and memorizing
9 = Seeking peer assistance
10 = Seeking teacher or adult guidance

Table 4

Frequencies of Strategies for Learning and Remembering by Grade

	Responses				
Grade	None	Direct	Active	Help	Other
1	14	33	20	2	0
3	7	10	49	7	1
5	7	9	50	5	0

Note. None = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other = Other Strategy

Table 5

Frequencies of Strategies for Planning and Completing Projects by Grade

	Responses				
Grade	None	Direct	Active	Help	Other
1	32	18	8	10	1
3	14	23	23	13	1
5	9	10	32	18	2

Note. None = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other = Other Strategy

Table 6

Frequencies of Strategies for Completing Math Assignments by Grade

	Responses				
Grade	None	Direct	Active	Help	Other
1	15	16	9	19	10
3	14	9	35	7	9
5	15	6	39	9	3

Note. None = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other = Other Strategy

Table 7

Frequencies of Strategies for Preparing for a Test by Grade

	Responses				
Grade	None	Direct	Active	Help	Other
1	20	12	30	6	1
3	7	6	54	5	2
5	8	0	55	5	3

Note. None = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other = Other Strategy

Table 8

Frequencies of Strategies for Completing Homework by Country

	Responses				
Country	None	Direct	Active	Help	Other
USA	9	7	5	16	57
Korea	10	27	1	3	76

Note. No Strategy = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other Strategy = Other Strategy

Table 9

Frequencies of Strategies for Improving Study at Home by Country

	Responses				
Country	None	Direct	Active	Help	Other
USA	18	10	32	30	4
Korea	28	20	63	7	2

Note. None = No Strategy

Direct = Direct Effort

Active = Active Practice

Help = Help from Others

Other = Other Strategy

Appendix A

Problem-Solving Interview Questions

Home and Community Settings

1. Self-evaluation

Cindy and Beth have been working together, making their new Halloween costumes for a party tonight. Beth feels that she is satisfied with her costume and is ready to wear it now. Cindy feels that before wearing the costume she wants to look at the costume to make sure that it fits well. Which would be better to do? Why?

2. Organizing and transforming

Danny wants to make breakfast-in-bed for his mother on her birthday. He finds that there are many different things that he needs to make breakfast. The cooking tools and ingredients are in different places in the kitchen. Would it be better for him to get the things he needs all at once. Or should he get them out only when he is ready to use them? Why?

3. Goal-setting

Molly wants to accomplish something during her summer break. Should she set a goal for herself or just do things as they happen? Why?

4. Planning

Patrick will take a trip with his family and needs to get ready. Should he plan what he is to take? Or should he wait for his parents to tell him what clothes and other things he should pack for the trip? Why?

5. Seeking information

Brian was given instructions for making a kite but he does not understand all of the instructions. Although he thinks he knows how to make a kite, he is not sure. Should he try to figure out the instructions first? Or should he go ahead and make the kite? Which is better for him to do? Why?

6. Self-monitoring

Peter was trying to fix his broken bicycle. Every time he fixed a part, he then stopped and looked at it carefully to see if he was doing it right. Is it better for him to do things this way or should he continue straight through on his bicycle? Why?

7. Environmental structuring

Scott is building a small house for his puppy. The tools and lumber to build the house are in a small, crowded shed where it is difficult to work. Should he concentrate on getting the dog house built right where it is or should he try to clear some more room to work? Why?

8. Rehearsing and memorizing

Melanie has been learning how to cook spaghetti but it is difficult to remember all of the steps in the right order. Should she try to memorize those steps or ask her mother which ones she should take next? Why?

9. Seeking peer assistance

Rebecca is trying to figure out how to find her lost kitten. She has looked all over the neighborhood and in the places where her kitten usually goes. Should she ask her friends to help her think of places to look for the kitten or to continue looking for it on her own? Why?

10. Seeking teacher or adult assistance

Tamara's father gave her a place in his garden to grow vegetables. She know what vegetables to grow but she is not sure how to prepare the ground correctly. Her father knows how to do it. Should she prepare the ground by herself or ask her father to help her? Why?

<u>School Settings</u>

1. Self-evaluation

Lewis has been working on an activity for class for the last week and he now thinks that it is ready to give it to the teacher. When he examines it, he begins to wonder if he did the activity correctly. Should he give it to the teacher first or review it one more time before giving it to the teacher? Why?

2. Organizing and transforming

Julia is collecting things for an environmental project for her class. Some of them are easy to find and others have to be found in different parts of school. Would it be better for her to make changes in her project so that it will be easier to collect all of the things? Or should she go ahead with the project as it is? Why?

3. Goal-setting

When starting a new school activity, Lisa always thinks carefully about the project and her goals in doing it. Her friend Melissa prefers to begin quickly because she enjoys the excitement of the new activity. Which is a better way to begin the activity? Why?

4. Planning

Cameron is going to tell the class about growing vegetables. Since she has a lot of experience in growing vegetables, should she go to class and tell what she does, or should she first plan her presentation? Which would be better for her to do? Why?

5. Seeking information

Molly's teacher asks her to set up the science experiment. Molly knows what goes in the experiment, but she is not sure how to arrange it well. There is a book on the shelf with a picture of how to set up a science experiment. Should she look at information in the book? Or should she set up the experiment as best she knows how? Why?

6. Self-monitoring

Tim says that it helps him to stop sometimes in the middle of a math problem that he is trying to solve and consider other ways he might solve it. His friend says that this is wasting time and that it is better to keep on working to the end. Which is better to do? Why?

7. Environmental structuring

Carrie wants to finish her math problems correctly and on time, but she is sitting in a corner of the room that is very noisy, making it difficult for her to concentrate on the problems. Should she try to concentrate harder and not let the noise bother her or should she move to another place in the room? Why?

8. Rehearsing and memorizing

Jim wants to be able to get all of the math problems correct in class. However, sometimes it is difficult to remember all of the steps it takes to do certain math problems. Would it be better to practice some of those steps or to keep trying to get them right when he solving problems? Why?

9. Seeking assistance

Sam is trying to complete his assignments for math class but he is not sure the best way to go about it. Should he try to think of a good way o his own or ask his friends for some suggestions about ways to do the assignment? Why?

10. Seeking teacher or adult assistance

While trying to solve some math problems for class, Nick realized that he did not know the right ways to do it. He decided that he could either solve them the best way he knows how, or he could ask the teacher to show him how. Which would be better to do? Why?

Appendix B

Personal Self-Regulation

1. Imagine that your class is studying about the ocean. The teacher says that she will test the class later. Do you have a way to help you learn and remember what you've learned in class?

2. Teachers often give students projects to do outside of class. When your teacher assigns you a project to do, how do you go about planning and completing the project?

3. Is there any special way you use to complete your math assignments?

4. Many teachers give a test at the end of the unit. Do you have a special way for preparing for a test in your classes?

5. Sometimes students have problems completing homework because there are other more interesting things they would rather do. Do you have any special way for getting yourself to complete your homework under these circumstances?

6. Many students have to complete some assignments or get ready for class at home (eg., study for spelling test, times tables test). Do you have any special ways for improving the way you study at home?

Appendix C

Log-Linear Analysis: A Brief Explanation

Log-linear analysis is a powerful model-fitting procedure based upon cross-tabular data in multidimensional contingency tables, such as chi-square tables used in this study. By converting observed responses to logarithmic values and testing the "goodness of fit" of models that could account for the data, log-linear analysis enables the researcher to pinpoint more precisely than chi-square analysis exactly which factors (as part of a model) have greatest influence on the results.

In order to interpret the log-linear statistics, only a few concepts need to be understood. First, model fitting can be understood as a statistical approach to finding underlying patterns. In this study, one possible model is "Country," where observed differences are accounted for in terms of whether children are Korean or American; this model is similar to an analysis of variance main effect for country. Another model is "Grade, Given Country," where differences in Korean and American children are treated as covariates and differences in grade responses are adjusted based upon country differences; this model is similar to analysis of covariance with country as the covariate. A third model is the "Interaction of Country and Grade," where differences in both are accounted for; this model is similar to an analysis of variance interaction effect. Finally, there could be a "Saturated" model that accounts for the data only by looking at each of the

separate cells in the contingency tables; this model is not represented in any of the analyses in this study.

There are two types of log linear analysis: symmetrical and asymmetrical. Symmetrical analysis is used when there are no hypotheses related to the effects of one variable on another. Asymmetrical analysis is used when there are hypotheses that at least one variable may influence another. In this study, we are interested in whether country or grade influence children's responses to the interview questions. Therefore, asymmetrical analysis is the appropriate procedure to use.

Estimated lambdas are logarithmically derived values that represent the degree of deviation of observed responses from predicted responses. A negative lambda means that the observed responses were fewer than expected from the overall tabular responses in the table. A positive lambda indicates that observed responses are greater than the expected number of responses based upon tabular data. Tests of significance are used to determine which lambdas are statistically significant.